

|                               |                        |  |                     |  |
|-------------------------------|------------------------|--|---------------------|--|
| <b>Notice of Allowability</b> | <b>Application No.</b> |  | <b>Applicant(s)</b> |  |
|                               | 10/690,047             |  | MARTIN ET AL.       |  |
|                               | <b>Examiner</b>        |  | <b>Art Unit</b>     |  |
|                               | Ling-Siu Choi          |  | 1713                |  |

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--**

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 05/30/2006.
2. ☒ The allowed claim(s) is/are 20-35.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a) ☐ All    b) ☐ Some\*    c) ☐ None    of the:
    1. ☐ Certified copies of the priority documents have been received.
    2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
    3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\* Certified copies not received: \_\_\_\_\_.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
  5. ☐ CORRECTED DRAWINGS ( as "replacement sheets") must be submitted.
    - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review ( PTO-948) attached
      - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date \_\_\_\_\_.
    - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date \_\_\_\_\_.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

**Attachment(s)**

- |   |  |
|---|--|
| <ol style="list-style-type: none"> <li>1. <input type="checkbox"/> Notice of References Cited (PTO-892)</li> <li>2. <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)</li> <li>3. <input type="checkbox"/> Information Disclosure Statements (PTO-1449 or PTO/SB/08),<br/>Paper No./Mail Date _____</li> <li>4. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit<br/>of Biological Material</li> </ol> | <ol style="list-style-type: none"> <li>5. <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)</li> <li>6. <input type="checkbox"/> Interview Summary (PTO-413),<br/>Paper No./Mail Date _____</li> <li>7. <input type="checkbox"/> Examiner's Amendment/Comment</li> <li>8. <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance</li> <li>9. <input checked="" type="checkbox"/> Other <u>Supplemental Office Action</u>.</li> </ol> |
|---|--|

*Supplemental*  
**Office Action Summary**

Application No.

10/690,047

Applicant(s)

MARTIN ET AL.

Examiner

Ling-Siu Choi

Art Unit

1713

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) \_\_\_\_ is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☐ Claim(s) \_\_\_\_ is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 21 October 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date ____. | 6) <input type="checkbox"/> Other: ____.  |

**DETAILED ACTION**

1. This Office Action is in response to the Amendment filed May 30, 2006. Claims 1-19 and 36 were canceled and claims 20-35 are now pending.

***Allowable Subject Matter***

2. Claims 20-35 are allowed.
3. The following is an examiner's statement of reasons for allowance:

The present claims are allowable over the closest references: Ballard et al. (US 4,056,669), Ballard et al. (US 3,969,386), Setterquist (US 3,950,269), Candlin et al. (US 3,738,944), and Kruse (US 3,773,742).

|  |
|--|
| <b>A polymerization catalyst</b> composition comprising  |
| $MR_4$ [claim 2: $M(CH_2XR_3)_4$ : X = C, Si, Ge, Sn, or Pb]<br>M = titanium, zirconium, or hafnium<br>R = beta-stable ligand  |
| Wherein $MR_4$ is supported on an aluminum-containing support comprising at least one of fluorided alumina, fluorided/silated alumina, aluminophosphate, or mixtures thereof |

(summary of claim 1)

Ballard et al.'669 disclose a catalyst for ethylene polymerization, comprising (a) a transition metal complex of general formula of  $MR_m$ , wherein M is a metal of Group

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IVa; R is a group of the general formula of  $-\text{CH}_2\text{Z}(\text{R}^1)_3$  with Z being silicon, germanium, tin, or lead and  $\text{R}^1$  being hydrocarbon or hydrogen and (b) particulate alumina, wherein the transition metal complex can be zirconium tetrabenzyl (claims 1 and 5). However, Ballars et al.'669 do not teach or fairly suggest a catalyst composition having the metal complex comprising  $\beta$ -stable ligand and the specific support.

Ballard et al.'386 disclose an organometallic compound for olefin polymerization, the organometallic compound having the general formula of  $\text{M}(\text{CH}_2\text{SiR}^1\text{R}^2\text{R}^3)_m$  with M being titanium and being supported on silica, alumina, or mixtures thereof (col. 4, lines 13-21 and 54-59; claims 1 and 4). However, Ballars et al.'386 do not teach or fairly suggest a catalyst composition having the metal complex comprising  $\beta$ -stable ligand and the specific support.

Setterquist discloses a catalyst for olefin polymerization, comprising (a) a tetra(hydrocarbyl) transition metal compound in the general formula of  $(\text{RCH}_2)_4\text{M}$  with R being aryl or tertiary alkyl and M being Ti, Zr, or Hf and (b) alumina, wherein the tetra(hydrocarbyl) transition metal compound can be tetra(neophy)zirconium or tetra(benzyl) zirconium; the alumina has a surface area of 10 to 500  $\text{m}^2/\text{g}$  (col. 5, lines 66-68; col. 6, lines 1-8; claims 1 and 8-10). However, Setterquist does not teach or fairly suggest a catalyst composition having the metal complex comprising  $\beta$ -stable ligand and the specific support.

Candlin et al. disclose a catalyst for olefin polymerization, comprising (a)  $\text{M}[\text{CH}_2\text{Z}(\text{R})_3]_4$  with Z being silicon, germanium, tin, or lead and (b) silica, wherein  $\text{M}[\text{CH}_2\text{Z}(\text{R})_3]_4$  can be zirconium or titanium tetra(benzyl) col. 2, lines 47-72; col. 3, lines

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1-6; Examples 1 and 7). However, Candlin et al. do not teach or fairly suggest a catalyst composition having the metal complex comprising  $\beta$ -stable ligand and the specific support.

Kruse discloses a catalyst comprising (a) tetraneopentyl titanium and (b) silica or alumina (abstract; col. 2, lines 12-13 and 51-56). However, Kruse does not teach or fairly suggest a catalyst composition having the metal complex comprising  $\beta$ -stable ligand and the specific support.

In light of the above discussion, it is evident as to why the present claims are patentable over the prior art.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

### ***Conclusion***

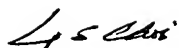
4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ling-Siu Choi whose telephone number is 571-272-1098.

If attempt to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Wu, can be reach on 571-272-1114.

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LING-SUI CHOI  
PRIMARY EXAMINER

June 5, 2006

FIG. 1

